

# PHENIX WEEKLY PLANNING



July 17, 2014  
Don Lynch

## This Week

TECHNICAL SUPPORT NORTH

- Shield wall disassembly completed
- MuID collars down and stowed in IR
- MMS moved South
- Disassembly of cables and cooling lines to F/VTX started
- Dumbwaiter and ladder removed and stowed, EC platforms folded
- Disconnecting of EC begun
- 4 more WP's
- sPHENIX support
- MuTr station 2 & 3 North maintenance and repairs completed



## Next Week

- Move EC to AH
- Install plates, 20 ton cart and manlift
- Move MuID collars to AH
- Disassemble F/VTX from CM and move to Physics for repairs
- Continue assembly of MPC-Ex North
- Begin installation of Station 1 South scaffolds
- Continue sPHENIX support



7/17/2014

## 2014 planned Technical Support &amp; 2014 Shutdown

<b>Procure &amp; Fabricate parts for MPC-Ex North and South</b>	<b>Done</b>
<b>Set up Physics lab for FVTX/VTX east</b>	<b>Done</b>
<b>End of Run Party</b>	<b>Done</b>
<b>MuID Efficiency Measurement (Itaru, requires cooling water &amp; isobutane)</b>	
<b>VTX /FVTX Cold/warm tests &amp; evaluation, MPC-Ex Voltage tests</b>	<b>Done</b>
Start of Shutdown Tasks (purge flammable gas, disassemble and stow shield wall, remove collars, move EC to AH, Move MMS south, etc.)	7/7 – 7/25/2014
<b>Open MMN hatch, MuTr North Sta 2 &amp; 3 maintenance and repairs</b>	<b>Done</b>
Remove FVTX/VTX East (West?) to PHYSICS, repair and reinstall	7/14 – 10/15/2014
Place FVTX/VTX West in safe condition in-situ ?	7/14-7/18/2014
VTX/FVTX Upgrade cooling lines, chiller preventive maintenance	7/21-10/6/2014
Remove MMS east vertical lampshade	7/28-7/30/2014
Troubleshoot intermittent water leak in MMS	7/30- 8/8/2014
Other Maint. In MMS	7/30-8/29/2014
Install scaffolding in Sta 1 South	7/28/2014
Remove MPC-Ex prototype	7/28-8/1/2014
MuTr Sta 1 South troubleshooting and repairs	7/28-8/1/2014
Maint. & Repairs for MPC South, BBC South, RPC1 South1	7/28-8/1/2014
Summer Sunday prep AH, tours and restore AH	7/30-8/6/2014
Assemble & test MPC-Ex North, ready for installation	8/1-9/5/2014
Remove scaffolding from sta 1 south, Move CM South	8/4-8/5/2014
Install scaffolding in Sta 1 North	8/6-8/8/2014
Prep MPC-Ex North installation area	8/8-8/15/2014
MuTr Sta 1 & Sta. North troubleshooting and repairs	8/11-9/5/2014
MPC North-remove damaged crystals, repair as necessary, re-install	8/18-9/5/2014
Install new MPC-Ex North, thoroughly test before moving CM north	9/8-9/26/2014
Reinstall MMS east vertical lampshade	9/2-9/5/2014
Assemble & test MPC-Ex South, ready for installation	9/2-10/3/2014

## 2014 planned Technical Support & 2014 Shutdown (cont'd)

Remove Sta 1 N scaffolds, Move CM North, Install scaffolding in Sta 1 S	9/29-10/3/2014
Install MPC-Ex South	10/6-10/24/2014
Reinstall, reconnect, re-survey and re-commission VTX/FVTX	10/16-11/26/2014
Other detector support	TBD
Infrastructure Maintenance and Improvement	TBD
Decommissioning of obsolete PHENIX detector equipment	TBD
sPHENIX Support	on-going
End of Shutdown Tasks (Move MS north, roll in EC , install collars, remove 10 ton cart, plates and manlifts, build shield wall, etc.)	10/27-11/26/2014
DC East & West maintenance & repairs	11/17-12/5/2014
Pink/White/Blue Sheets	12/1-12/19/2014
End of Shutdown Party	????
Start Flammable gas flow	????
Close shield wall, install radiation interlocks and prepare for run 14	12/31/2014
Start run 15	1/2/2015

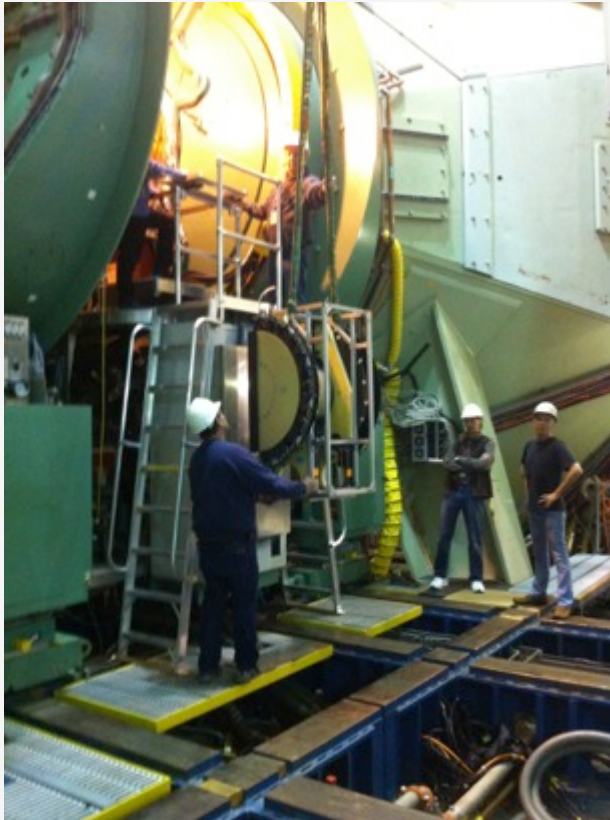


## Muon Tracker Shutdown Work List – summer 2014

- testing as MPC-EX installed, particularly before closing Sta-1's
- **fix North Arcnet – N.2.7.1, North Sta-2 Oct-7 Chassis-1 (bad cable?) - Done**
- fix packets that were disabled for Run14
  - 11035,36 – South Sta-1 Quad-4 Chassis-3
  - **11267,68 – North Sta-2 Oct-7 Chassis-2 - Done**
- replace boards for most frequent FEM problems from run
  - 11195 - North Sta-1 Quad-3 Chassis-3?
    - might have already done this; check history (changed RX 3/14/12)
  - 11064 – South Sta-2 Oct-3 Chassis-3 - unreachable
- N341 HV trip problem?
- auto-reboots of ArcNet and iocondev's for calibration?
- Access needed:
  - South & North Sta-1
  - **Inside North Sta-2 on bottom Done**
- Main Issue – Manpower

## Work Permits for 2014 Shutdown

- **Start of Shutdown - Done**
- **VTX/FVTX East - Done, at CAD for approval**
- **MPC-Ex - Done, at CAD for approval**
- **MuTr Sta 1 N & S - Done, at CAD for approval (scaffold agreement done)**
- **MuTr North station 2/3 - Done, at CAD for approval**
- MuTr South station 2/3
- MMS South Water leak
- DC East/West
- **MPC North - Done**
- RPC North/South ?
- End of Shutdown



VTX/FVTX east repairs/upgrades required

West to remain installed (Not likely) ??



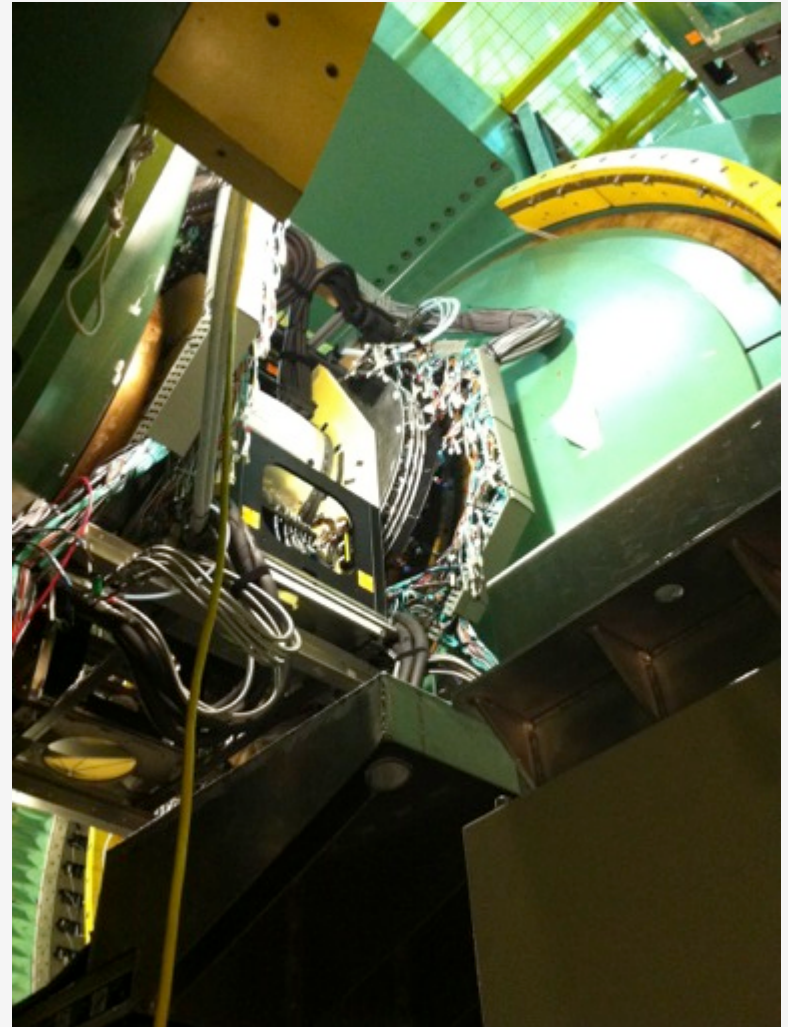
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# Post Run VTX/FVTX test results/consequences:

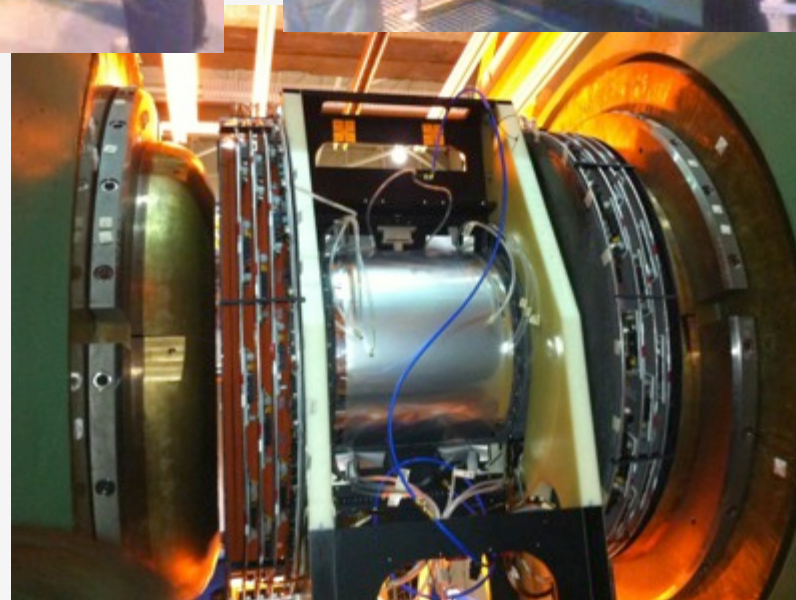
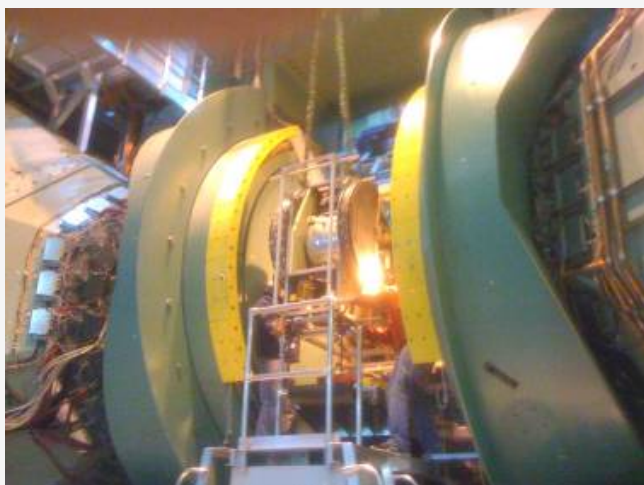
- Condensation likely cause of many strip-pixel and FVTX problems
- Need to better seal against condensation intrusion into VTX/FVTX shell
- Need to dismount FVTX/VTX West
- Need to disassemble East for FVTX, pixel and strip-pixel repairs
- Do not need to disassemble West, only repair FVTX, possible pixel/strip-pixel tests without disassembly?
- *All Tasks Completed?*
- *Other findings/consequences?*

PHENIX - PROTON-ANTIPROTON



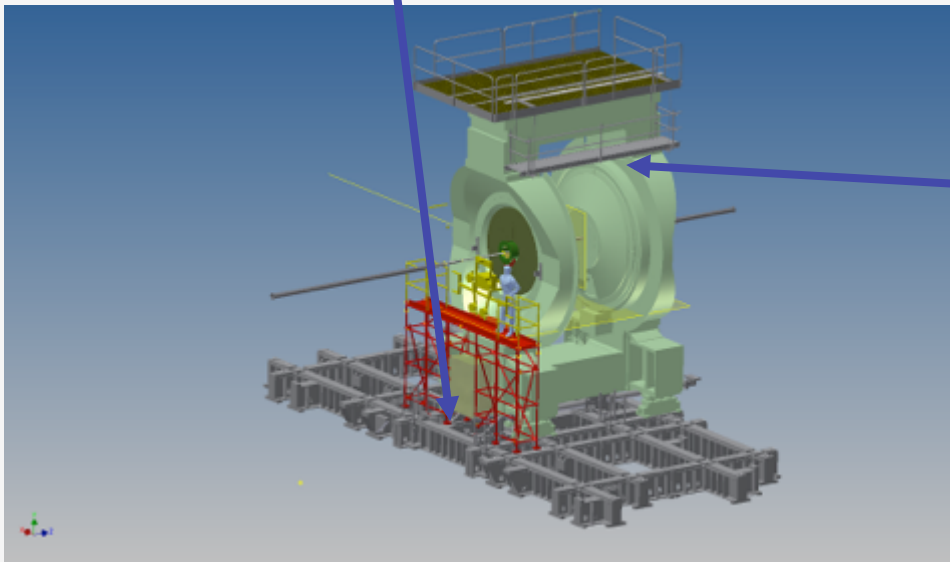
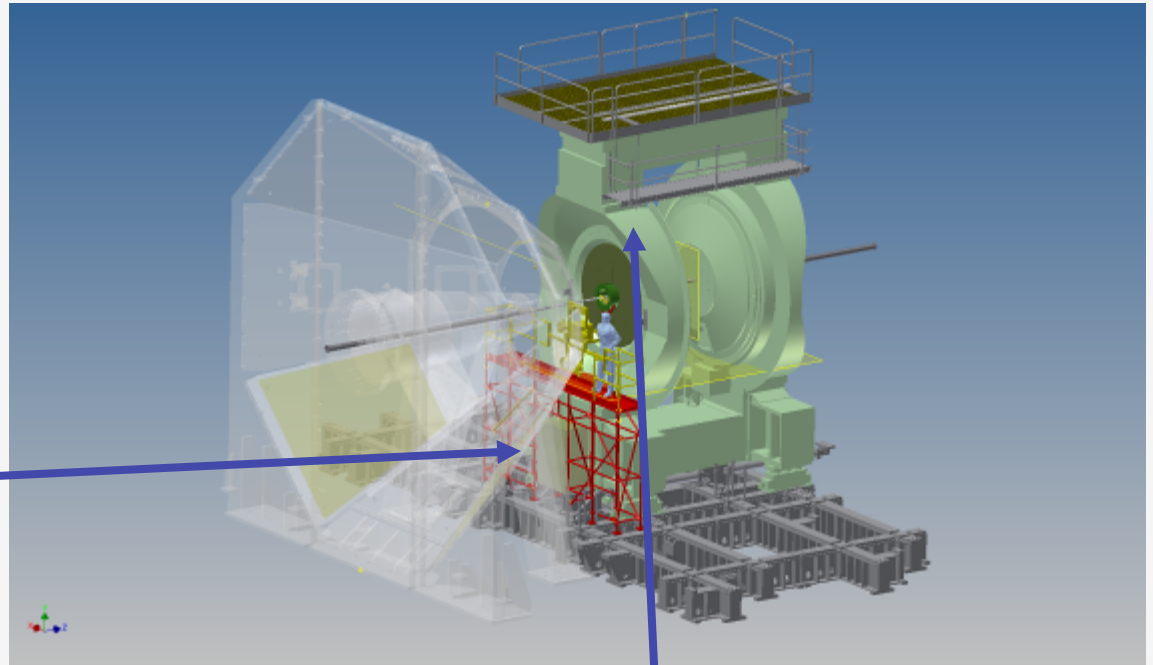
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VTX Installation 2010,  
2011 & 2012. 2014 Removal  
and re-installation will be  
essentially the same.

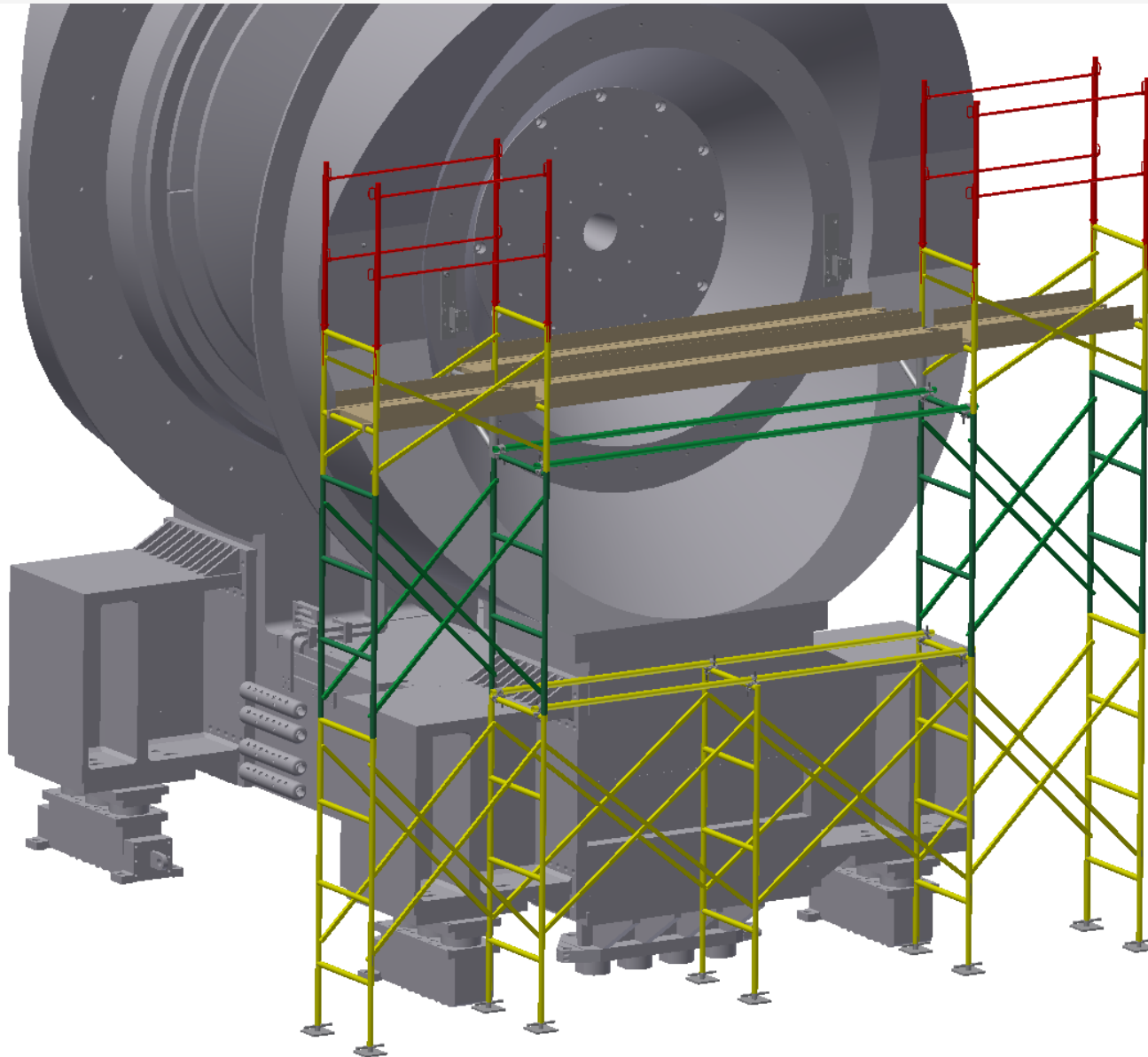




Station 1 platform configured for lower level access shown with North Muon Magnet in phantom for reference and invisible for clarity.



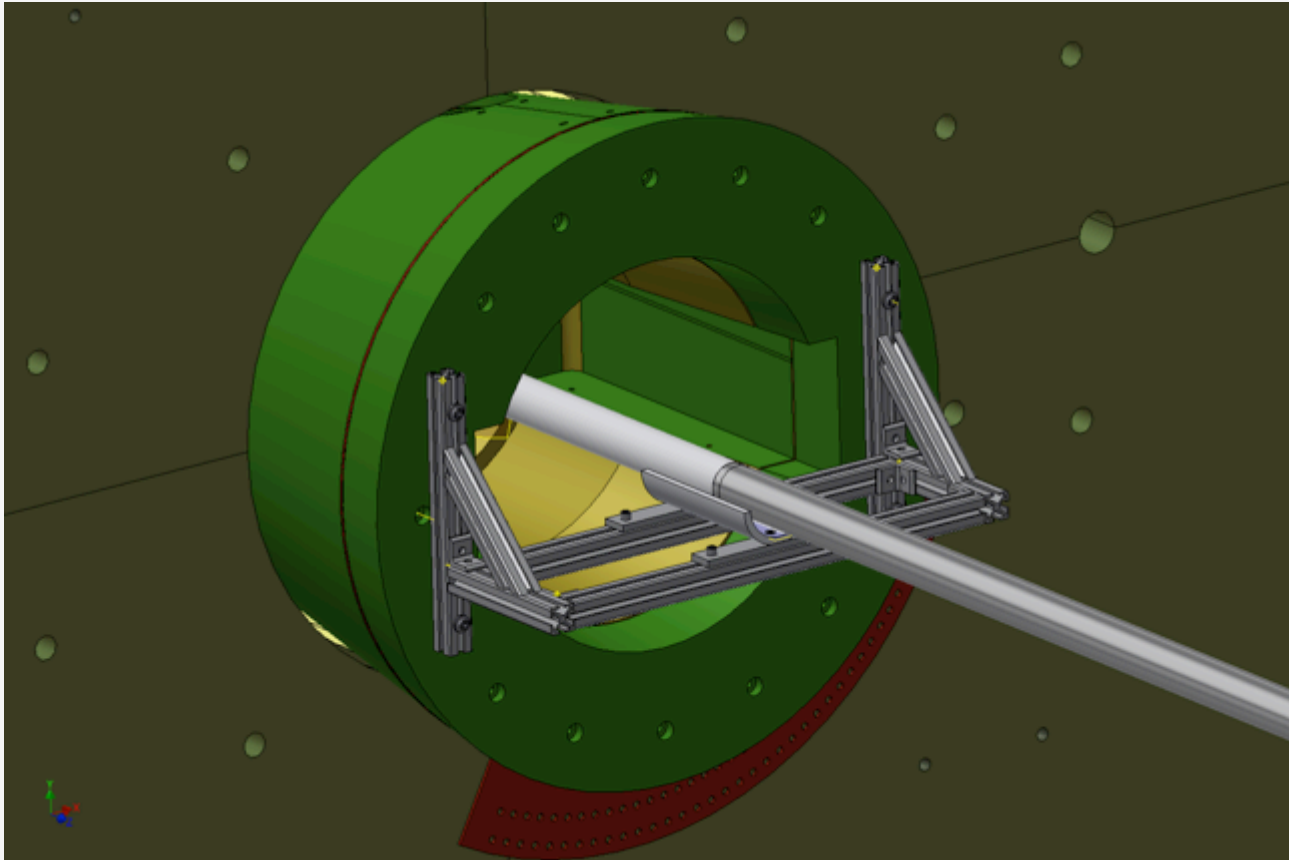
Central Magnet suspended work platform also shown in both models, but not needed for 2014 shutdown.

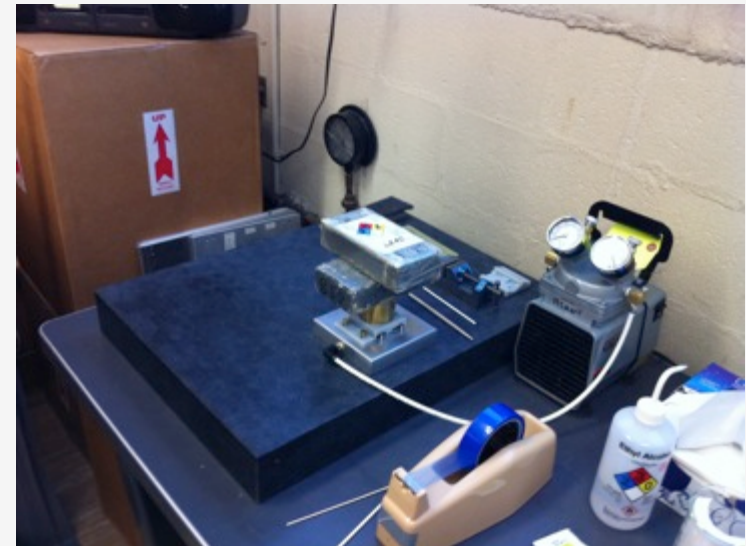
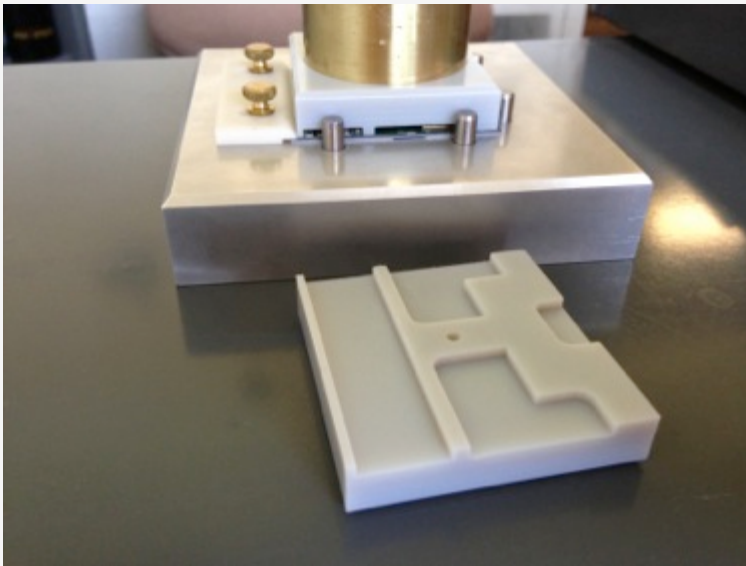
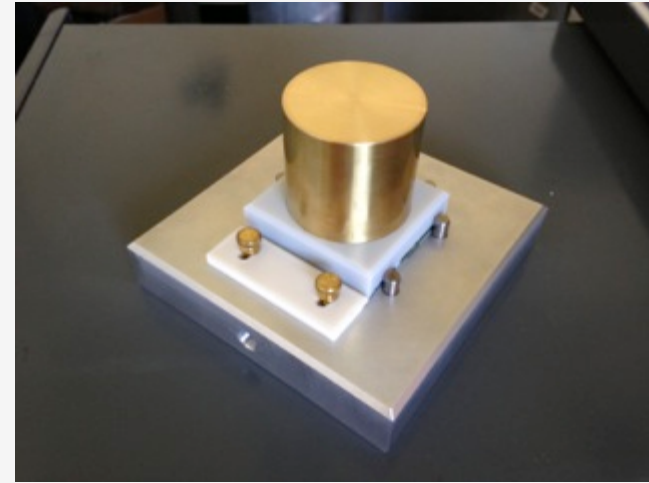
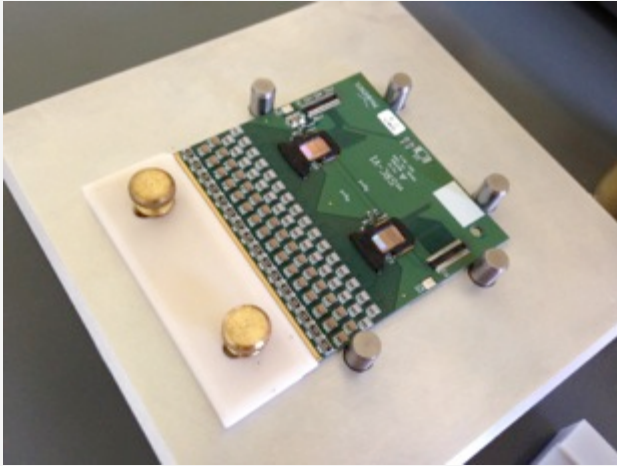


SAFWAY  
Scaffolding  
arrangement  
for upper access.  
Ladder and MMN  
not shown for  
clarity.

Configuration  
required for space  
between CM and  
MMS is similar.





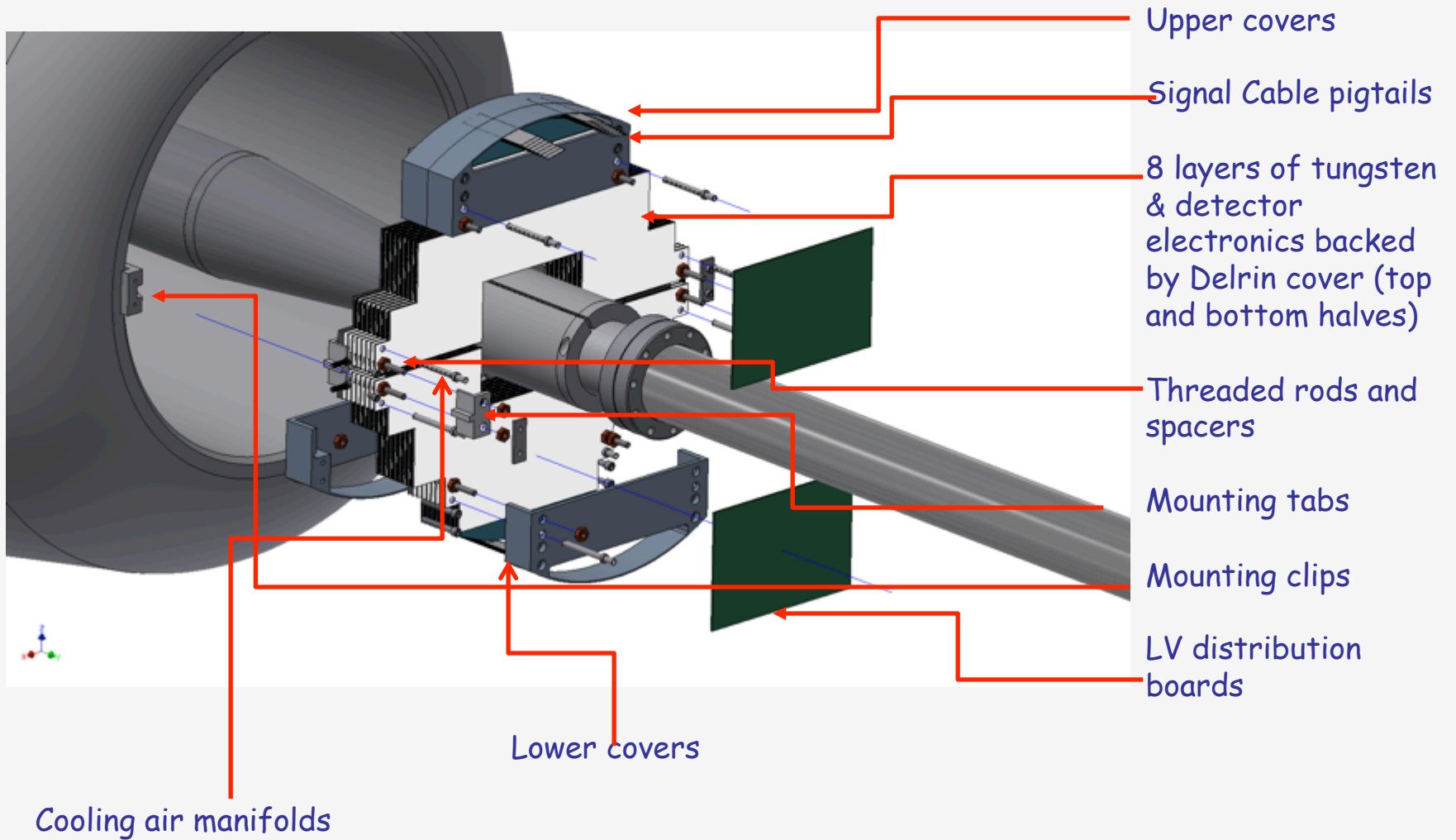


Micromodule Gluing tool micromodule parts and glued assembly currently in production

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# MPC-Ex Exploded view

TECHNICAL SUPPORT NO. 4



## MPC-Ex N & S Final Installations This summer

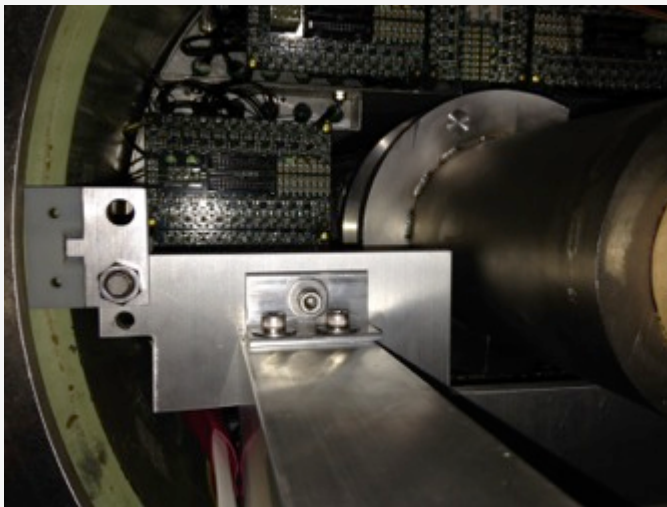
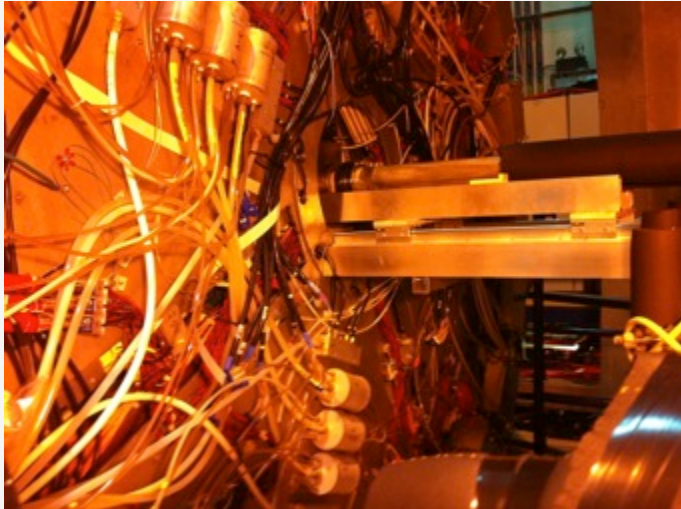
Working on North BP support design

Tungsten plates received, QC acceptable

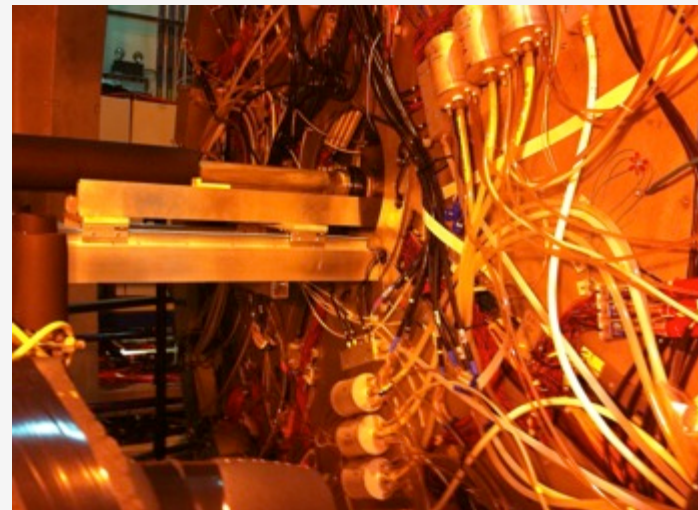
Additional parts ordered from CS due end of June

Recent tests indicate additional spacers needed, Rich will correct the design. Also need to use the HBD fans (?) for cooling

T. Hemmick calculated that we need 275 l/min @ 2500 pascals per half moon – microtel fan. (My original calculations were 20.1 cfm at 10 “WC per station – 2 microtel fans)



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## MPC-EX Status Summary

- **Sensors:**
  - 200 tested sensors at BNL
  - 50 shipped from ISU
  - 130 in testing at Yonsei
  - 37 wafers (74 sensors) under fabrication at ETRI (done now?)
- **Micromodule Production:**
  - 74 “final” production micromodules (with spacer) laminated as of 7/8
    - 46 of these are at wire bonding (Norbert to assist Don Pinelli)
  - Lamination proceeding steadily at 8 micromodules/day (Lucy)
    - Additional assembly jigs have been ordered
  - Conductive leaf replaced with Cu tape
  - Next batch of 201 ROCs sent to QuikPak for SVX4 wire bonding
    - 82 ROC boards still in production at Sierra
- **Other Detector Components:**
  - Tungsten and Carrier Boards at BNL, in assembly (or assembled)
    - Parts being tracked carefully as they are used for testing, etc.
  - Assembled FEMs received at BNL 7/7
- **Run-14 Engineering Run:**
  - Bias testing underway now that run is over, large currents seen
    - Strong suspicion that this is due to lifted bias leafs
- **SLAC Test Beam:**
  - June 20-30, great success



## MPC-Ex Project Summary

Sent to Stony Brook for tests:

- 8 (4 x and 4 y) carrier boards laminated to 'W' plates (new plates).
- 3 loose carrier boards for testing (one missing a connector)
- 50 brass spacer nuts
- 4 SS 1/4 - 20 x 4" studs
- 4 rapid prototyped spacers
- 1 micromodule

Mike Lenz office:

- 1 Assembly fixture
- 3 Delrin covers (in the shape of the 'W' plates)
- 6 'W' plates (new plates) (all laminated, 5 are in Mike's 's office, Sarah took 1 to 1008 for tests)**
- 100 brass spacer nuts**

**At Central shops/Instrumentation (due 7/11/14):**

**4 additional sets of micro-module assembly fixtures (bases at Instrumentation for 3D printing)**

Jim LaBounty's office:

Installation assembly parts (to be itemized)

(Additional parts in currently installed partial South prototype to be itemized)

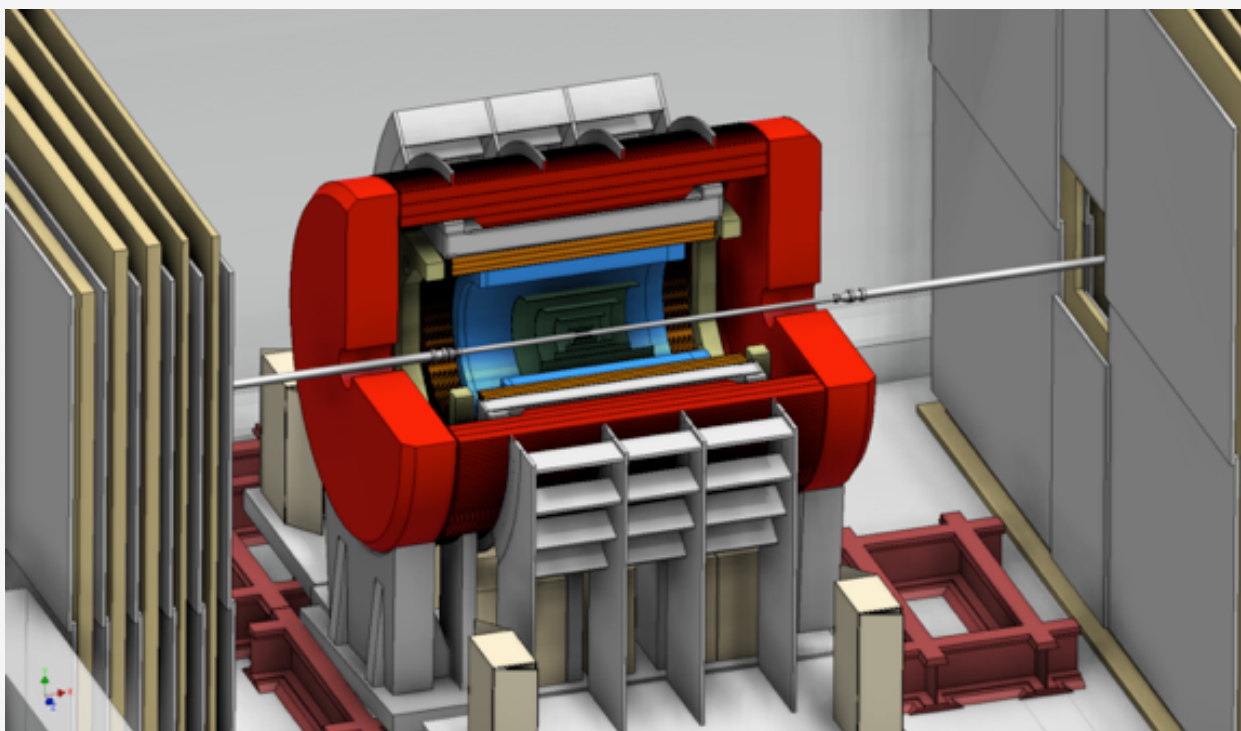
## Other Shutdown work:

Request from E. Kistenev for 1 FCal module for R&D

- can be removed from north or south FCal ?
  - Difficulty ?
  - WP needed ?
  - Comments ?
- 
- Parts at CS for test cutting

Design efforts over the next few months will include several areas of emphasis:

- (a) incorporating a more detailed flux return (cap) design
- (b) Firm up detector subsystem specifications and design
- (c) Support structure design and analyses
- (d) Infrastructure and support system design and analyses
- (e) Magnet acquisition testing and design of modifications



Basic sPHENIX model cutaway (updated)



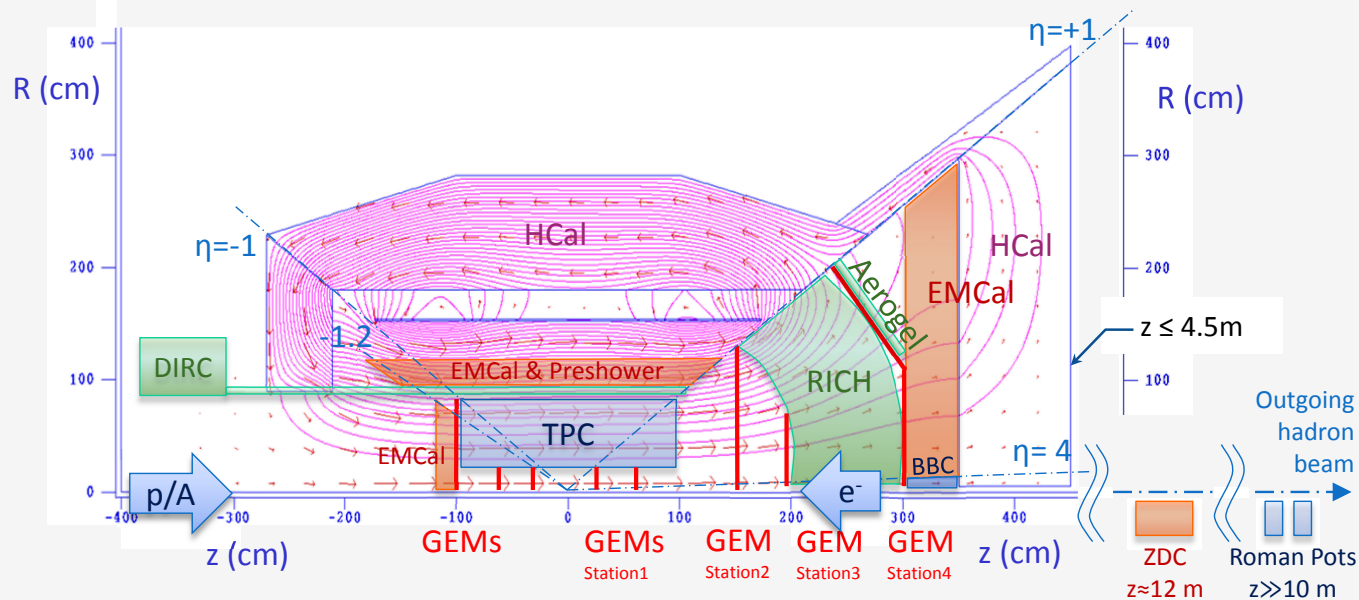
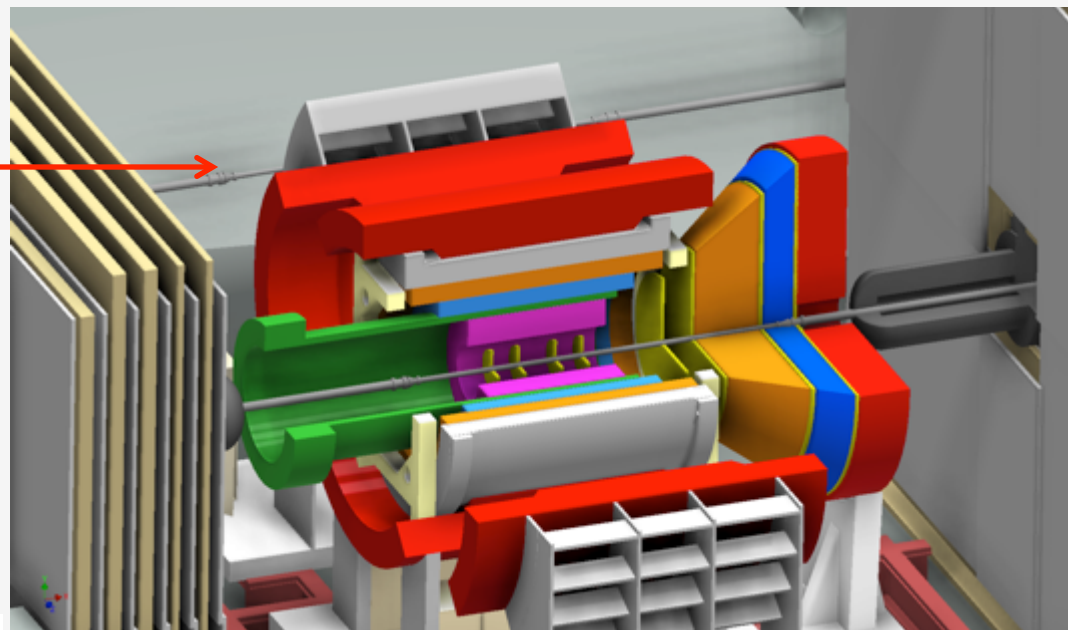
# BABAR Magnet Update

- Meeting yesterday at magnet division
- Reviewed possible stack modifications.
  - Some intrusion into HCal is unavoidable
  - Kovac sending proposed modification step files to Rich, then we will incorporate into envelope drawing
  - Proposed solution minimizes modifications to “doghouse” and makes all modifications at existing joints in current leads and LHe fittings.
  - Mag Div will evaluate thermal consequences.
  - Proposed solution is reasonable in cost and may be incorporated prior to Magnet tests at 912
- Shipping review during week of 7/28

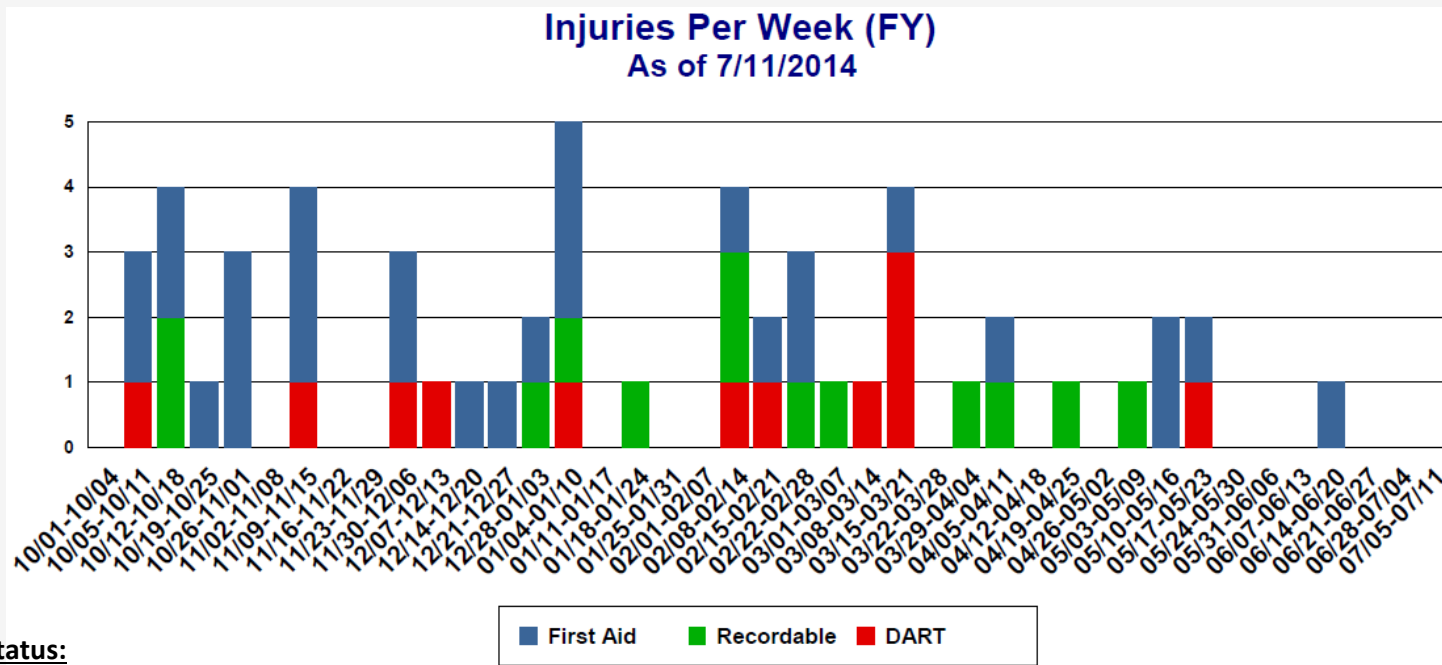


2ft high x 1 ft wide  
clearance needed  
for e-ring  
components

ePHENIX



PHENIX - TRC REPORT - 2014



**Injury Status:**

FY14 YTD: DART – 12, TRC – 25, First Aid – 29

FY13: DART – 16, TRC – 38, First Aid – 53

FY12: DART – 19, TRC – 36, First Aid – 69

FY13 Injury Listing: <https://intranet.bnl.gov/esh/shsd/seg/OccInj/BNLInjuries.aspx>

**Recent Injuries**

	None
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7/17/2014



Recent Events		
7/9/14	Non-Reportable	A backhoe leaked hydraulic fluid onto the ground. Emergency Response responded immediately, as did the environmental team. Workers cleaned up the approx. 3 to 3.5 quarts of hydraulic fluid that leaked from a loose fitting on the machine. The fitting has been tightened (repaired) and the machine is back in service. ( <a href="#">Event Link</a> )
7/9/14	Non-Reportable	During a planned routine inspection, a C-AD electrical engineer found a cracked capacitor associated with a pulse forming network (PFN) at RHIC. A small amount of non-PCB oil, i.e., a few ounces, leaked into secondary containment. As the potential for an electrical fire had been previously analyzed, routine monthly inspections, smoke detectors, and secondary containment have been the controls used to date. C-AD will perform a critique to assess the event and determine if additional controls are needed. ( <a href="#">Event Link</a> )
7/8/14	SC-3	Fire-Rescue received an alarm from Lab 137 in Building 734. Upon arrival at the scene, the individual working in the Lab said that he was annealing one wire with a match and the match fell into the wastebasket. When he saw flames, he placed the wastebasket into a fire resistant hood and the smoke activated the fire alarm system. He explained that there was still a fire in the hood. The firefighters extinguished the fire immediately with one dry chemical extinguisher (< 1 minute). There was no smoke condition in the room and only minor burn marks with soot in the hood. There were no injuries or damage to any other equipment. ( <a href="#">Event Link</a> )
7/8/14	Non-Reportable	A Phase III steam system in Building 463 (Biology) was leaking from an undetermined line at the roof level. To locate the steam leak, an investigation team opened a wooden box on the roof that concealed utilities, which had previously serviced a cooling tower that has since been removed. When the box was opened, the team found two 2-inch conduits with multiple loose conductors with their ends taped. The team immediately treated them as potentially live and conducted an investigation to determine if they were energized and from where they were fed. The investigation found that the circuits were removed and pulled back from the basement disconnect switches on both the line and load sides. While these wires were not energized, they were not in an NEC compliant arrangement. Two electrical boxes will be placed over the conductors and the wire ends will be terminated with lock nuts with the boxes. ( <a href="#">Event Link</a> )
7/5/14	Non-Reportable	Contractors working on construction of a beamline hutch in Building 742 severed an 80-psig compressed air line while positioning a manlift. The compressed air line is a ½-inch copper pipe that protrudes from the accelerator shield wall and is located within Hutch A of beamline 2-ID. Once broken, compressed air escaped and was directed perpendicular to the vertical accelerator wall. There was no injury or other damage. The area within the hutch, as well as approximately 20 feet outside of the hutch, is isolated with rope and marked as a "Lead Work Area" due to ongoing hutch assembly work. While there is no exposed lead, Hutch A is constructed of pre-formed steel-lead-steel "sandwiched" panels. The area is isolated, as there may be some drilling through the panels and painted lead may be directly manipulated onto the concrete floor during hutch assembly. Surface samples collected in other similar hutch assembly areas have yielded minor lead contamination. There has been no drilling or direct manipulation of painted lead in this area. ( <a href="#">Event Link</a> )
7/2/14	Non-Reportable	A backhoe digging in the vicinity of the southeast corner of Building 815, as part of a project to install a new gas line for National Grid, contacted and broke two building grounding cables at a depth of approximately 12 inches. There was no electrical energy present. The cables were repaired on July 3, 2014 by contract electricians. ( <a href="#">Event Link</a> )

7/17/2014



## Where To Find PHENIX Engineering Info

*2014 Shutdown Continues !*

*I will be on vacation next week ☺*



[http://www.phenix.bnl.gov/WWW/INTEGRATION/ME&Integration/DRL\\_SSint-page.htm](http://www.phenix.bnl.gov/WWW/INTEGRATION/ME&Integration/DRL_SSint-page.htm)

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